

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
1 July 2004 (01.07.2004)

PCT

(10) International Publication Number:  
**WO 2004/054991A1**

(51) International Patent Classification<sup>7</sup>: C07D 277/62,  
213/18, 207/06, 233/54

(21) International Application Number: PCT/EP2003/012811

(22) International Filing Date:  
17 November 2003 (17.11.2003)

(25) Filing Language: German

(26) Publication Language: German

(30) Priority Data:  
102 58 671.3 13 December 2002 (13.12.2002) DE

(71) Applicant (for all designated States except US): **MERCK  
PATENT GMBH** [DE/DE]; Frankfurter Strasse 250, 64293  
Darmstadt (DE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **IGNATYEV, Nikolai**  
[UA/DE]; Prinzenstrasse 104, 47058 Duisburg (DE). **WELZ-  
BIERMANN, Urs** [DE/DE]; Rebenstrasse 103, 64646  
Heppenheim (DE). **SCHMIDT, Michael** [DE/DE]; Wein-  
bergstrasse 41, 64342 Seeheim-Jugenheim (DE). **WILLNER,  
Helge** [DE/DE]; Föhrenkamp 3, 45481 Mülheim/Ruhr (DE).  
**KUCHERYNA, Andriy** [UA/DE]; Wörthstrasse 6, 47053  
Duisburg (DE).

(74) Common Representative **MERCK PATENT GMBH**;  
Frankfurter Strasse 250, 64293 Darmstadt (DE).

(81) Designated states (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO,  
CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB,  
GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH,  
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated states (regional): ARIPO Patent (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ,  
TM), European Patent (AT, BE, BG, CH, CY, CZ, DE,  
DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL,  
PT, RO, SE, SI, SK, TR), OAPI Patent (BF, BJ, CF, CG,  
CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: IONIC LIQUIDS HAVING  $[\text{N}(\text{CF}_3)_2]^+$  ANIONS

(57) Abstract: The present invention relates to salts comprising bis(trifluoromethyl)imide anions and saturated, partially or fully unsatu-  
rated, heterocyclic cations, to a process for the preparation thereof, and to the use thereof as ionic liquids.